

**STOCKPILE
REPORT
to the
CONGRESS**

JANUARY - JUNE 1969

**EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF EMERGENCY PREPAREDNESS**

WASHINGTON, D. C. 20504

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OFFICE OF THE DIRECTOR

October 20, 1969

Honorable Spiro T. Agnew
President of the Senate

Honorable John W. McCormack
Speaker of the House of Representatives

Sirs:

Pursuant to Section 4 of the Strategic and Critical Materials Stock Piling Act, Public Law 520, 79th Congress, there is presented herewith the semiannual report to the Congress on the strategic and critical materials stockpiling program for the period January 1 to June 30, 1969.

A statistical supplement to this report was transmitted to you on September 10, 1969.

Sincerely,

A handwritten signature in dark ink, appearing to read "G. A. Lincoln". The signature is fluid and cursive, with the first letters of each word being capitalized and prominent.

G. A. Lincoln
Director

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INTRODUCTION

Under Presidential Executive Order 11051, the Director of the Office of Emergency Preparedness is authorized and directed to determine from time to time what materials are strategic and critical as well as the quality and quantities of such materials which shall be stockpiled. This report covers the principal activities in stockpile planning and management carried out during the period January 1 through June 30, 1969.

SUPPLY-REQUIREMENTS STUDIES

In order to assure that current requirements are reflected in the National Stockpile, OEP maintains close surveillance over the materials that are stockpiled and initiates new supply-requirements analyses whenever reviews indicate that the status of a particular material has substantially changed or will change in the future.

Conventional War. Conventional war stockpile objectives are based on a hypothetical three-year war estimated to begin not less than one or more than two years in the future. To determine the size and scope of the war effort, OEP projects the gross national product and its various components through the inter-

vening years prior to the outbreak of the war and then through each of the three war years.

Revised GNP projections based upon new military estimates of mobilization requirements were completed in December 1968. Immediately thereafter, work began on new supply-requirements studies for all stockpile materials. By June 30, 1969, 38 determinations on materials in the stockpile had been completed. Of this total, 29 determinations were made for basic materials and nine determinations were made on subobjectives for upgraded forms of stockpiled materials. There were increases in nine objectives, decreases in 17 objectives, and two objectives—kyanite-mullite and talc—remained unchanged. Corundum was removed from the List of Strategic and Critical Materials for Stockpiling. In the case of the nine subobjectives established for the upgraded forms of materials, three were increased, four were decreased, and two remained unchanged. The new and old levels of the objectives for these materials are indicated below.

Reviews of the remaining stockpile materials were being continued as of the end of the report period.

CONVENTIONAL WAR STOCKPILE OBJECTIVES

Material	Unit	New Objective	Old Objective
Cadmium.....	LB	6,000,000	5,100,000
Chromite, chemical.....	SDT	250,000	600,000
Chromite, metallurgical.....	SDT	3,650,000	2,970,000
Chromite, metallurgical ore.....	SDT	3,117,440	2,509,125
Chromium, ferro, high carbon.....	ST-E	317,500	162,500
	(gw) ST	(127,000)	(65,000)
Chromium, ferro, low carbon.....	ST-E	135,000	200,000
	(gw) ST	(54,000)	(80,000)
Chromium, ferro, silicon.....	ST-E	58,500	87,000
	(gw) ST	(39,000)	(58,000)
Chromium, metal, electrolytic.....	ST-E	21,560	11,875
	(gw) ST	(6,160)	(3,250)
Chromite, refractory.....	SDT	368,000	1,425,000
Cobalt.....	LB	38,200,000	42,000,000
Corundum.....	ST	(Removed from list)	2,500

CONVENTIONAL WAR STOCKPILE OBJECTIVES (Continued)

Material	Unit	New Objective	Old Objective
Kyanite-Mullite.....	SDT	4,800	4,800
Manganese, battery, natural.....	SDT	135,000	80,000
Manganese, battery, synthetic dioxide.....	SDT	1,900	6,700
Manganese, chemical, type A.....	SDT	35,000	68,500
Manganese, chemical, type B.....	SDT	35,000	64,000
Manganese, metallurgical.....	SDT	4,000,000	7,900,000
Manganese, metallurgical ore.....	SDT	2,605,600	6,647,500
Manganese, ferro, high carbon.....	ST-E	1,200,000	1,000,000
	(gw) ST	(600,000)	(500,000)
Manganese, ferro, low carbon.....	ST-E	18,000	18,000
	(gw) ST	(9,000)	(9,000)
Manganese, ferro, medium carbon.....	ST-E	72,000	72,000
	(gw) ST	(36,000)	(36,000)
Manganese, silico.....	ST-E	81,900	135,000
	(gw) ST	(45,500)	(75,000)
Manganese, metal, electrolytic.....	ST-E	22,500	27,500
	(gw) ST	(9,000)	(11,000)
Mercury.....	FL	126,500	200,000
Mica, muscovite splittings.....	LB	19,000,000	22,200,000
Mica, phlogopite splittings.....	LB	950,000	1,300,000
Nickel.....	ST	55,000	20,000
Platinum.....	TrOz	555,000	335,000
Quartz crystals.....	LB	320,000	650,000
Quinine.....	OZ	3,600,000	4,130,000
Rare Earths.....	SDT	6,500	8,000
Rubber, natural.....	LT	385,000	130,000
Shellac.....	LB	1,000,000	8,300,000
Talc, steatite block and lump.....	ST	200	200
Thorium oxide.....	ST	40	250
Tin.....	LT	232,000	200,000
Vanadium.....	ST	2,100	1,500
Vegetable Tannins:			
Chestnut.....	LT	8,000	15,000
Quebracho.....	LT	20,000	86,000
Wattle.....	LT	2,600	15,000

ABBREVIATIONS

E	Ore Equivalent	Oz	Ounces
FL	Flasks	SDT	Short Dry Tons
gw	Gross Weight	ST	Short Tons
LB	Pounds	TrOz	Troy Ounces
LT	Long Tons		

Nuclear War. Work on reevaluating nuclear war stockpile objectives has been suspended pending the development of new OEP esti-

mates of the potential damage the U.S. might incur in a nuclear attack.

SUMMARY OF GOVERNMENT INVENTORIES OF STRATEGIC AND CRITICAL MATERIALS

As of June 30, 1969, the estimated market value* of strategic materials held in all Government inventories amounted to \$6.9 billion. Acquisition cost was \$6.7 billion. Of this total, \$4.4 billion at cost was in the National Stockpile, \$1.4 billion in the Supplemental Stockpile, \$0.9 billion in the Defense Production Act inventory, and \$0.02 million in the Commodity Credit Corporation inventory. Of the total materials in Government inventories, approximately \$3.3 billion at cost or \$3.1 billion at estimated market value were considered to be in excess of stockpile objectives. Over 78 percent of the market value of that excess (\$3.1 billion) was made up of 10 materials: alumi-

num, metallurgical grade bauxite (Jamaica and Surinam), metallurgical grade chromite (upgraded forms and subspecification ores), cobalt, industrial diamond stones, lead, metallurgical grade manganese, tin, tungsten, and zinc.

The following table is a summary of the total value of all materials carried in Government inventories including those with quantities in excess of established stockpile objectives as of June 30, 1969. It indicates the acquisition cost and estimated market value of materials with inventories meeting stockpile objectives, and materials with inventories excess to stockpile objectives.

SUMMARY OF GOVERNMENT INVENTORIES OF STRATEGIC AND CRITICAL MATERIALS

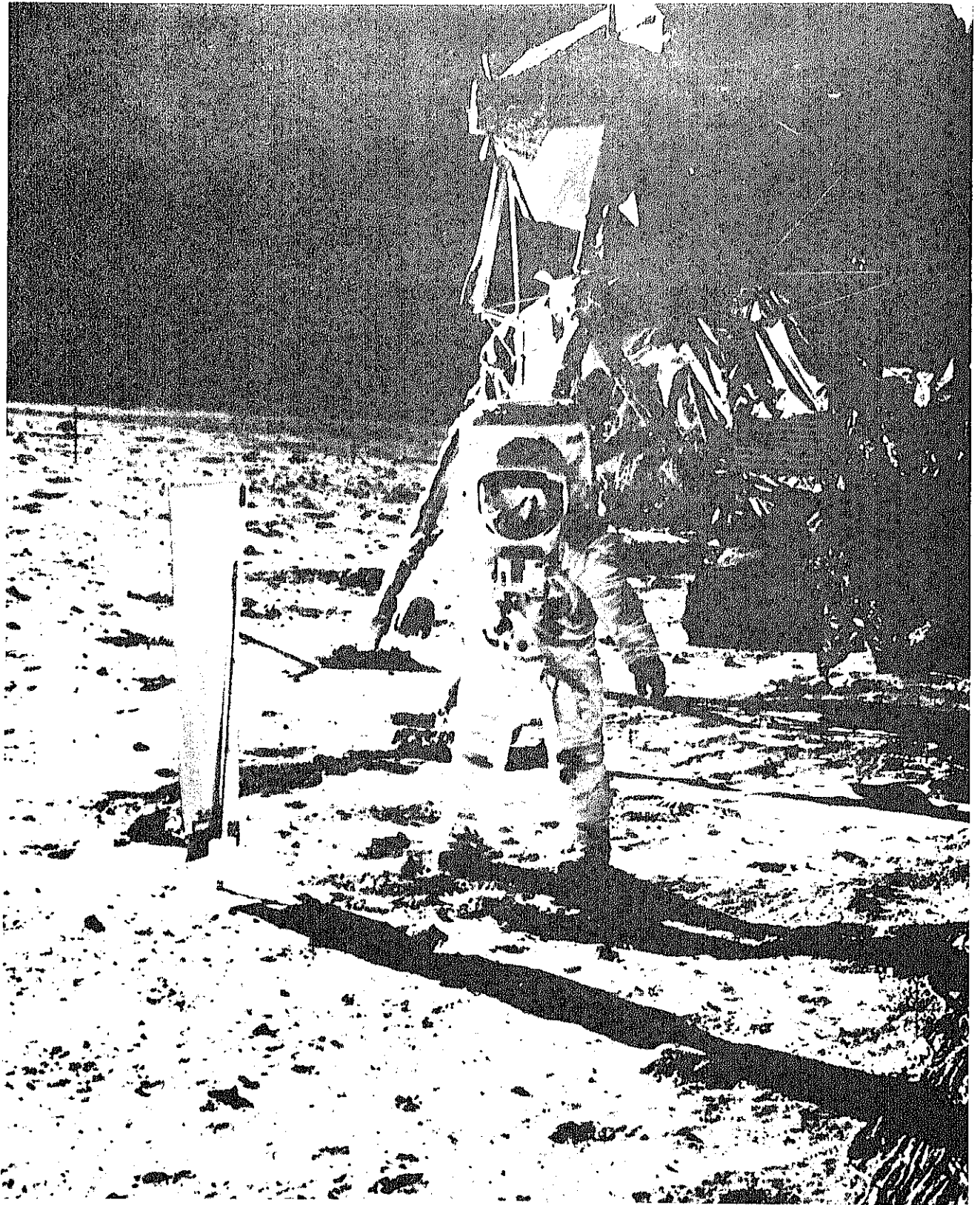
June 30, 1969

	Acquisition Cost	Market Value
I. Total Inventories		
National Stockpile.....	\$4,369,438,600	\$4,891,723,800
Supplemental Stockpile.....	1,449,403,700	1,438,566,500
Defense Production Act.....	911,434,400	549,885,600
Commodity Credit Corporation.....	21,400	20,100
Total on Hand.....	6,730,298,100	6,880,196,000
On Order.....	84,043,800	102,282,500
II. Inventories Within Objective		
Total on Hand.....	3,437,098,900	3,810,917,300
III. Inventories Excess to Objective		
Total on Hand.....	3,293,199,200	3,069,278,700

Source: General Services Administration

* For purposes of this report, estimated market value is computed from prices at which similar materials are being traded currently; or, in the absence of current trading, an estimate of the price which would prevail in commercial markets. The market

values are generally unadjusted for normal premiums and discounts relating to contained qualities. The market values do not necessarily reflect the amount that would be realized at time of sale.



Apollo 11 astronaut Edwin E. Aldrin, Jr., stands by deployed Solar Wind Composition.

STATUS OF STOCKPILE OBJECTIVES

The bar chart below shows the estimated market value of the objectives established and the extent to which materials on hand in all Government inventories (National Stockpile, Supplemental Stockpile, DPA, and CCC) meet

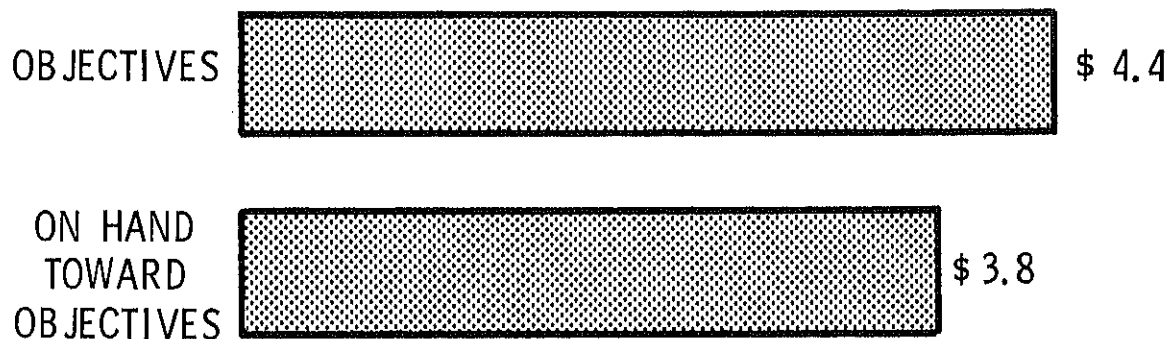
these objectives. The figures do not include the quantities on hand in all Government inventories which were in excess of stockpile objectives (\$3.1 billion).

STATUS OF STOCKPILE OBJECTIVES

AS OF JUNE 30, 1969

(In Billions of Dollars)

Market Value



The objective, inventory, excess, and balance of disposal authorizations, for each material on the Strategic and Critical Materials List, are shown in the following summary. As of June 30, 1969, total quantities of stockpile grade materials on hand and on order for all Government-owned inventories were in excess or equal to the stockpile objectives for 66 of the 76 basic materials on the List of Strategic and Critical Materials for Stockpiling. In addition to specification grade materials, Government inventories contain some nonspecification grades not credited to stockpile objectives. Much of the nonspecification grade materials in the National Stockpile was acquired by the transfer of Government-owned surpluses to the stockpile after World War II. Several were of specification grade when acquired but no longer qualify due to changes in industry practices and other technological advances.

Disposal balances shown in the following summary are from Congressional authorizations for National and Supplemental Stockpile excesses or, in the case of DPA materials, from disposal approvals by the OEP. While disposal planning is going on for most remaining excesses, there are a few materials for which disposal has been deferred pending new supply-requirements studies or improvement in market conditions. Certain technologically obsolete grades of materials now in inventory will be transferred to the disposal list as soon as new acquisitions are made of materials with currently standard qualities. Inventory changes during the report period were due primarily to disposals, or to reclassification, upgrading, and other adjustments in the inventories.

SUMMARY OF GOVERNMENT INVENTORIES, OBJECTIVES,
EXCESSES AND BALANCE OF DISPOSAL AUTHORIZATIONS

Basic Stockpile Materials
As of June 30, 1969

(Market Value—\$ Millions)

Commodity	Unit	Controlling Objective*	Total Inventory ^{1 2}	Market Value	Excess ²	Market Value	Balance of Disposal Authorization
1. Aluminum.....	ST	450,000	1,846,814	\$727.8	896,814	\$484.3	894,884 ³
2. Aluminum oxide, fused...	ST	300,000	428,554	56.2	128,554	16.5	128,553
3. Antimony.....	ST	25,500	46,963	51.4	21,463 ⁴	23.8	0
4. Asbestos, amosite.....	ST	40,000	63,956	13.5	23,956	5.0	12,151
5. Asbestos, chrysotile.....	ST	13,700	15,047	6.4	4,091 ⁵	0.7	305
6. Bauxite, metal, Jamaica.....	LDT	5,000,000	8,858,881	103.1	3,858,881 ⁶	44.9	714,000
7. Bauxite, metal, Surinam.....	LDT	5,300,000	7,889,967	121.1	2,589,967 ⁶	39.8	0
8. Bauxite, refractory.....	LCT	173,000	185,808	8.0	12,808	0.6	0
9. Beryl.....	ST	28,000	46,161	73.6	18,161 ⁷	29.1	4,974
10. Bismuth.....	LB	2,400,000	3,206,171	12.8	806,171	3.2	626,916
11. Cadmium.....	LB	6,000,000	11,160,202	37.7	5,160,202 ⁸	17.4	886,079
12. Castor oil.....	LB	22,000,000	70,559,229	12.1	48,559,229 ⁹	7.0	0
13. Celestite.....	ST	10,300	39,231	1.0	28,981	0.6	13,782
14. Chromite, chemical.....	SDT	260,000	1,259,040	28.1	999,040 ⁸	19.1	116,453
15. Chromite, metallurgical.	SDT	3,650,000	5,874,491	437.2	2,224,491 ⁹	250.3	999,153
16. Chromite, refractory.....	SDT	400,000	1,226,931	18.6	826,931	12.6	0
17. Cobalt.....	LB	88,200,000	87,999,905	161.8	49,799,905 ¹⁰	91.1	9,410,330
18. Columbium.....	LB	1,176,000	10,936,850	18.2	9,810,850	13.7	2,883,934
19. Copper.....	ST	775,000	257,708	244.5	0	0	0
20. Cordage fibers, abaca.....	LB	50,000,000	108,466,843	20.1	58,466,843	10.8	56,272,203
21. Cordage fibers, sisal.....	LB	200,000,000	206,463,231	18.8	6,463,231	0.6	0
22. Diamond dies, small.....	PC	25,000	20,441	0.8	442	0.02	0
23. Diamond, in- dustrial bort.	KT	24,700,000	42,611,479	101.4	17,911,479 ⁵	40.3	0
24. Diamond, industrial stones.....	KT	16,500,000	26,723,925	363.3	10,223,925 ¹¹	133.2	1,769,650
25. Feathers and down.....	LB	3,000,000	3,555,729	12.4	555,729	1.0	0
26. Fluorspar, acid grade....	SDT	540,000	1,104,037	59.1	214,037 ^{4 12}	11.0	0
27. Fluorspar, metallurgical.	SDT	850,000	411,738	17.5	0	0	0
28. Graphite, natural, Ceylon.....	ST	5,500	5,836	1.3	386 ¹³	.09	0

Commodity	Unit	Controlling Objective*	Total Inventory ^{1 2}	Market Value	Excess ²	Market Value	Balance of Disposal Authorization
29. Graphite, natural,							
Malagasy-----	ST	18,000	32,741	\$ 3.7	14,741	\$ 1.7	14,340
30. Graphite, other.	ST	2,800	4,528	1.0	1,728	0.4	0
31. Iodine-----	LB	8,000,000	8,011,839	9.9	11,839	.01	0
32. Jewel bearings--	PC	57,500,000	55,281,520	23.2	14,726,698 ¹⁴	6.2	0
33. Kyanite,							
Mullite-----	SDT	4,800	4,820	.5	20	.002	0
34. Lead-----	ST	0	1,161,753	348.5	1,161,753 ⁴	348.5	43,162
35. Magnesium-----	ST	90,000	125,564	92.0	35,564	26.1	33,350
36. Manganese, battery,							
natural-----	SDT	135,000	308,839	18.2	178,839 ⁵	10.2	0
37. Manganese, battery, synthetic							
dioxide-----	SDT	1,900	23,923	11.7	22,023 ¹⁰	10.8	16,975
38. Manganese ore, chemical A----	SDT	35,000	146,914	10.3	111,914 ⁵	7.8	0
39. Manganese ore, chemical B----	SDT	35,000	100,838	5.0	65,838 ⁵	3.3	0
40. Manganese, metallurgical.	SDT	4,000,000	12,760,169	417.0	8,760,169 ^{9 15}	247.8	2,542,408
41. Mercury-----	FL	126,500	200,093	99.0	73,593 ³	36.4	0
42. Mica, muscovite block St./better-----	LB	6,000,000	15,899,209	61.8	8,558,509 ¹⁶	21.4	7,243,080
43. Mica, muscovite film, 1 & 2 quality-----	LB	2,000,000	1,469,002	17.0	57,486	.06	6,420
44. Mica, muscovite splittings-----	LB	19,000,000	43,941,913	52.7	24,941,913	29.9	21,727,993
45. Mica, phlogopite block-----	LB	17,000	200,057	.06	188,388	.04	183,329
46. Mica, phlogopite splittings-----	LB	950,000	5,021,101	8.0	4,071,101	6.5	3,691,511
47. Molybdenum----	LB	40,000,000	56,026,371	100.2	16,026,371	27.9	13,261,539
48. Nickel-----	ST	55,000	50,000 ¹⁷	103.0	0	0	0
49. Opium-----	AvLb	143,000	143,452	12.1	1,938	.09	1,850
50. Platinum group, iridium-----	TrOz	17,000	16,359	2.9	0	0	0
51. Platinum group, palladium-----	TrOz	1,800,000	1,049,807	44.1	0	0	0
52. Platinum group, platinum-----	TrOz	555,000	450,032	55.1	0	0	0
53. Pyrethrum-----	LB	25,000	63,875	.6	38,875 ⁴	.4	0
54. Quartz crystals.	LB	320,000	5,214,041	56.0	4,894,041	52.3	4,563,082
55. Quinidine-----	OZ	2,000,000	1,600,377	3.6	0	0	0
56. Quinine-----	OZ	4,130,000	3,548,161	4.9	0	0	0
57. Rare earths-----	SDT	6,500	14,273	5.2	7,773	2.8	6,055
58. Rubber-----	LT	385,000	370,111	228.0	0	0	0
59. Rutile-----	SDT	200,000	50,927	7.4	0	0	0
60. Sapphire and Ruby-----	KT	18,000,000	16,305,502	.2	0	0	0
61. Selenium-----	LB	475,000	474,774	2.4	0	0	0
62. Shellac-----	LB	3,900,000	10,401,641	3.7	6,501,641 ⁸	2.1	1,782,915
63. Silicon carbide, crude-----	ST	30,000	196,453	43.0	166,453 ⁴	36.5	0

Commodity	Unit	Controlling Objective*	Total Inventory ^{1 2}	Market Value	Excess ²	Market Value	Balance of Disposal Authorization
64. Silver ----(fine)	TrOz	165,000,000	165,000,000	\$257.4	\$ 0	0	0
65. Sperm oil.....	LB	23,400,000	23,402,693	3.8	2,693	0	0
66. Talc, steatite block & lump.	ST	200	1,231	.4	1,031	.3	1,031
67. Tantalum.....	LB	3,400,000	4,339,619	51.9	939,619 ¹⁸	12.4	0
68. Thorium oxide..	ST	40	40 ¹⁹	¹⁹	0	0	0
69. Tin.....	LT	232,000	257,289	922.1	25,289	90.6	25,303
70. Titanium sponge.....	ST	37,500	29,726	71.3	0	0	9,225 ²⁰
71. Tungsten.....	LB	44,000,000	179,356,011	494.1	135,356,011 ⁵	372.7	31,697,739
72. Vanadium.....	ST	2,100	5,609	25.1	3,509	14.4	3,509
73. Vegetable tannin, chestnut.....	LT	9,500	30,299	4.4	20,799	3.0	13,704
74. Vegetable tannin, quebracho...	LT	50,600	193,158	45.0	142,558	33.2	106,811
75. Vegetable tannin, wattle.....	LT	9,500	37,437	7.4	27,937	5.5	22,290
76. Zinc.....	ST	0	1,148,996	333.2	1,148,996 ⁴	333.2	71,026

* Defense Mobilization Order 8600.1A provides that strategic stockpile objectives shall be adequate for conventional or nuclear war, whichever shows the largest supply-requirements deficit to be met by stockpiling.

¹ Total inventory consists of stockpile and nonstockpile grades.

² Includes quantities that have been committed for sale but not shipped, as well as quantities of nonstockpile quality materials which may be held toward objectives.

³ Committed for sale but undelivered under long-term contracts.

⁴ Balance of excess pending supply-requirements study.

⁵ Balance of excess pending Congressional approval.

⁶ Balance of excess pending submission to the Congress.

⁷ Excess quantity includes 3,617 ST in beryllium copper master alloy and 3,160 ST in beryllium metal.

⁸ Disposal planning on balance of excess currently under way.

⁹ Excess is in ferrochrome and subspecification ores.

¹⁰ Unauthorized excess held pending completion of present sales program.

¹¹ Balance of excess deferred by the Congress due to market impact.

¹² Excludes 350,000 SDT credited to metallurgical fluorapar.

¹³ Considered in balance.

¹⁴ Factory inspecting feasibility of reworking bearings to meet stockpile specifications.

¹⁵ Includes high carbon ferromanganese. Also includes quantity of metallurgical manganese ore retained for strategic reasons.

¹⁶ Excludes 840,700 LBS credited to mica, muscovite film.

¹⁷ Excludes nickel of the Bureau of the Mint, Department of the Treasury, stored at stockpile locations.

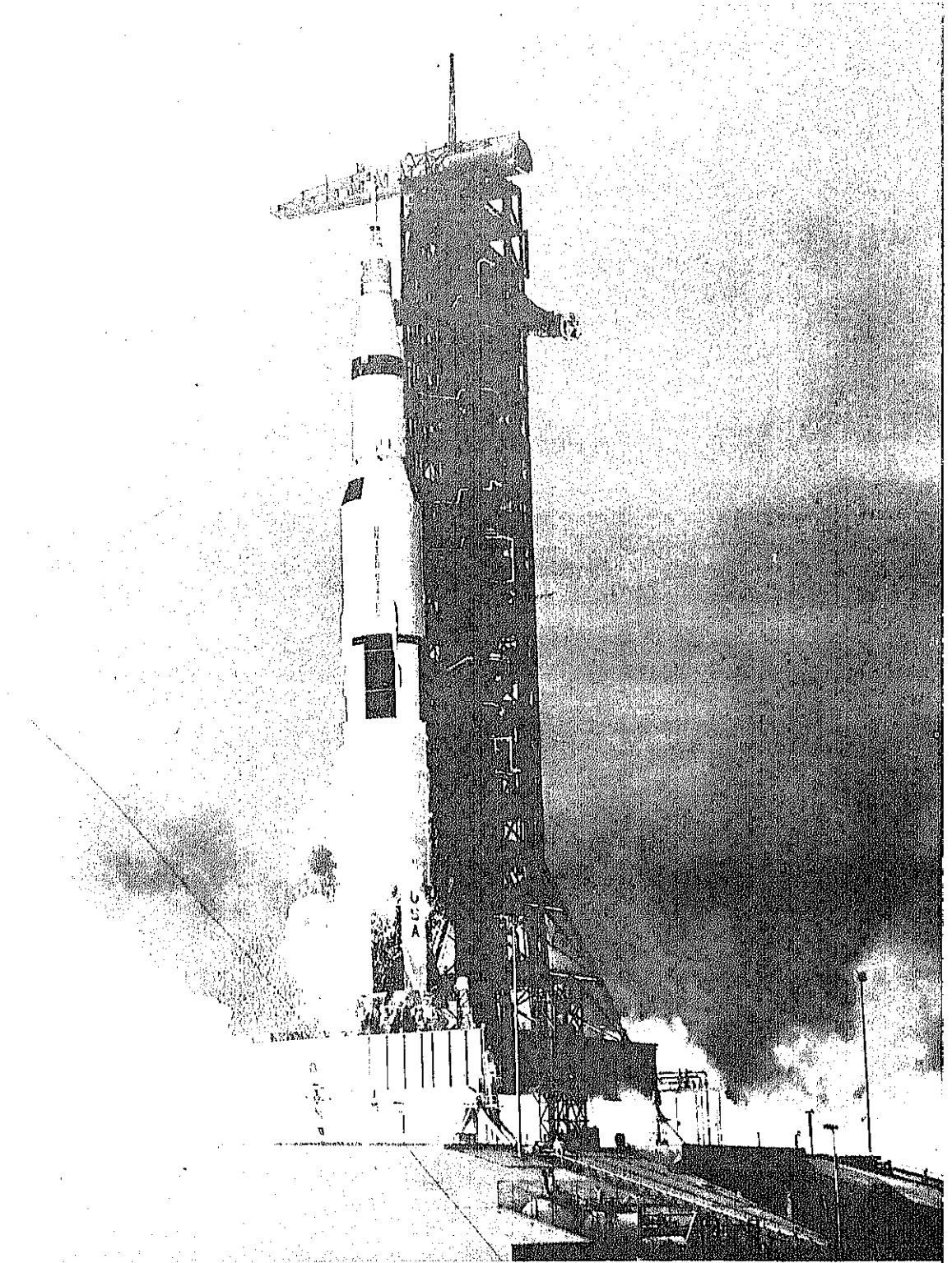
¹⁸ Materials required in upgrading.

¹⁹ Includes thorium nitrate credited as 40 ST thorium oxide, \$0.8 million market value.

²⁰ Nonstockpile material.

ABBREVIATIONS

FL	Flask	OZ	Ounce
KT	Carat	PC	Piece
LB	Pound	SDT	Short Dry Ton
LCT	Long Calcined Ton	ST	Short Ton
LDT	Long Dry Ton	TrOz	Troy Ounce
LT	Long Ton		



Lift-off of Apollo/Saturn V space vehicle carrying Apollo 10 astronauts.

OTHER MATERIALS IN GOVERNMENT
INVENTORIES

Inventories covering materials that have

been removed from the stockpile list, and others for which there are no stockpile objectives, are indicated in the table below. These were not included in the previous tabulation.

SUMMARY OF GOVERNMENT INVENTORIES AND BALANCE OF
DISPOSAL AUTHORIZATIONS COVERING MATERIALS FOR
WHICH THERE ARE NO STOCKPILE OBJECTIVES

As of June 30, 1969

(Market Value—\$ Millions)

Commodity	Unit	Total Inventory ¹	Market Value	Balance of Disposal Authorization
Antimonial lead.....	ST	10,336 ²	\$ 3.9	0
Asbestos, crocidolite.....	ST	47,754	8.9	47,739
Colemanite.....	LDT	55,663 ²	.5	0
Corundum.....	ST	1,964 ³	.2	0
Diamond tools.....	PC	64,178 ⁴	.8	0
Mica, muscovite block, St. B/Lower.....	LB	4,123,781	8.2	4,089,200
Mica, muscovite film, 3rd quality.....	LB	464,235	3.1	464,185
Platinum group metals, ruthenium.....	TrOz	2,500 ²	.1	0
Silk noils.....	LB	22,602 ²	.02	0
Talc, steatite ground.....	ST	3,900	.02	3,900
Thorium nitrate.....	LB	3,667,982 ⁵	15.3	3,138,861
Zirconium ore, baddeleyite.....	SDT	16,514	1.0	16,514
Zirconium ore, zircon.....	SDT	1,720	.002	1,720

¹ Includes quantities that have been committed but not shipped.

² Total inventory committed.

³ Pending Congressional approval.

⁴ Deferred due to market impact.

⁵ Includes 80,000 pounds credited to thorium oxide objective, \$0.3 million market value.

NATIONAL STOCKPILE ACTIVITIES

PROCUREMENT AND UPGRADING

The OEP Strategic Stockpile Procurement Directive for FY 1969, issued October 10, 1968, was amended April 9, 1969, to authorize the procurement of 200,000 fine troy ounces of platinum by upgrading stockpile platinum to 99.95 percent quality or through the exchange of excess materials.

PROCUREMENT—CASH

Jewel bearings. The Government-owned William Langer Jewel Bearing Plant, Rolla, North Dakota, continued to produce jewel bearings for the National Stockpile and for Defense contractors. The plant is operated by the Bulova Watch Company, Incorporated, under nonprofit contractual and lease agreements with GSA.

Plans are being developed for the conversion of plant operations to new and improved methods which are now possible under authorities made available to GSA by Public Law 90-469, enacted August 8, 1968. These plans are to be incorporated into new contractual arrangements which will provide for the contractor management operation of the plant by the Bulova Watch Company, Inc., and for the financing of this operation through a revolving fund. Upon conclusion of these arrangements, the new contract will replace the existing agreements. Amendments for the extension of these agreements to September 30, 1969, have been forwarded to the Bulova Watch Company for execution. These will provide for the continued operation of the plant while the new contract is being negotiated.

Jewel bearing production rates have been increasing during the past year, largely due to efforts by the Department of Defense to obtain compliance with its regulations governing the purchase of bearings from the plant. Because of a substantial increase in orders for watch bearings in 1968, the plant was authorized to increase its operating limit to a rate of four million bearings per year. Orders placed on the plant during January-June 1969, together with the anticipated is-

suance of strengthened Armed Services Procurement Regulation provisions requiring defense contractors to purchase jewel bearings from the plant, indicate that the high production rates will be sustained.

PROCUREMENT-EXCHANGE

Iridium. On December 19, 1968, a contract was entered into for 2,238 troy ounces of iridium for delivery on or before June 30, 1969. This material was delivered February 27, 1969. A contract for the balance of the 862 troy ounces of iridium authorized was awarded on May 9, 1969, for delivery by May 9, 1970. Payment for the iridium is to be made with excess materials available for sale under the stockpile disposal program.

Ferrocolumbium. On March 14, 1969, a contract was entered into for furnishing grade B ferrocolumbium containing 279,000 pounds of columbium. Deliveries under the contract are to be completed by March 14, 1971. Payment for the material is to be made with tungsten concentrates which the Government has available for sale on a shelf-item basis.

Platinum. On April 17, 1969, a contract was entered into for the upgrading of 200,000 troy ounces of Government-owned platinum. All deliveries and services under the contract are to be completed by April 17, 1970. As of June 30, 1969, 17,962 troy ounces of upgraded platinum had been processed and returned to the stockpile.

Solicitations for offers for the remainder of the items authorized in the Procurement Directive either by exchange or upgrading have been issued. Offers received for furnishing 3,300 short tons of chrysotile asbestos, 400,000 avoirdupois ounces of quinidine sulfate, and ferrotungsten containing 300,000 pounds tungsten were rejected. Offers received for 6,000 short tons of titanium sponge, 20,000 short dry tons of rutile, and 200,000 troy ounces of palladium were being evaluated at the end of the report period.

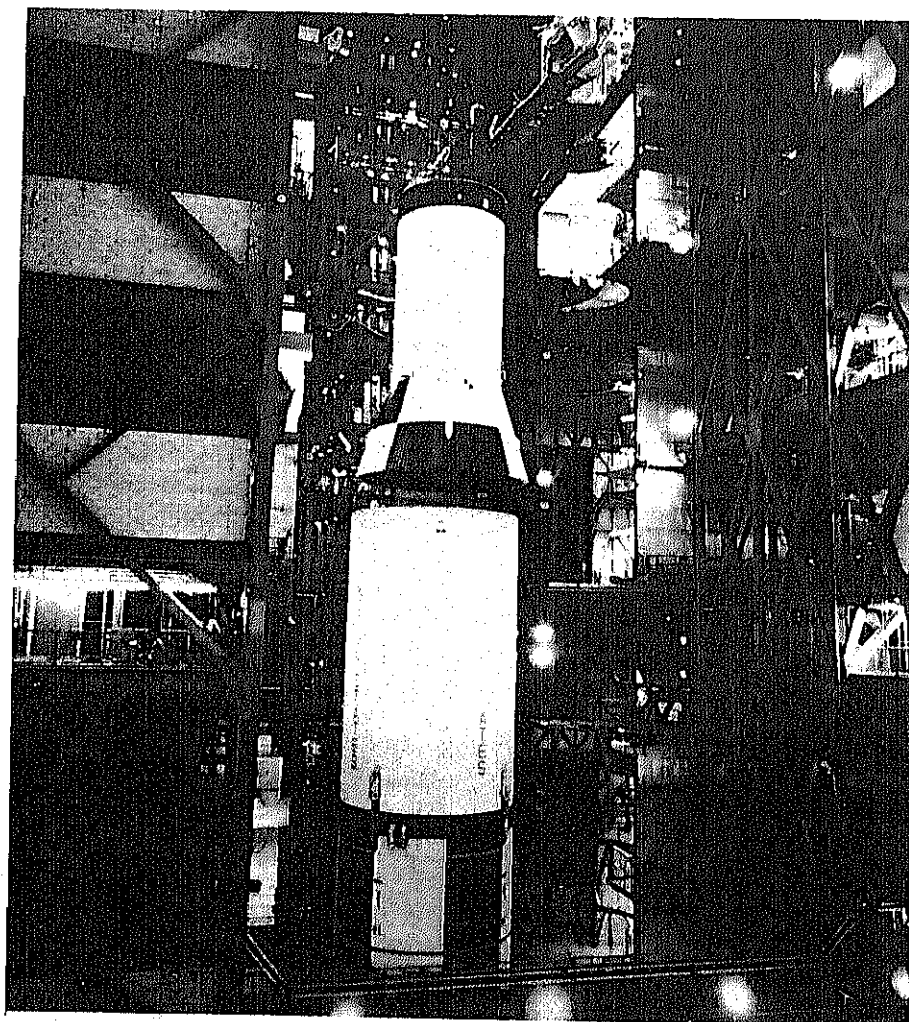
MATERIAL ON ORDER PRIOR TO FY 1969

Ferromanganese-Palladium. Under a contract entered into on August 31, 1967, for the acquisition of 200,000 troy ounces of palladium and the upgrading of manganese ore to 36,000 short tons of medium carbon ferromanganese, deliveries of the palladium have been completed. As of June 30, 1969, 18,660 short tons of ferromanganese were received. The processing of manganese ore to ferromanganese is continuing under the contract, with final delivery to be made not later than June 30, 1971.

Ferrocolumbium. The contract entered into

on June 5, 1968, for the conversion of Government-furnished columbium concentrates to ferrocolumbium containing not less than 186,000 pounds of columbium, was completed on February 25, 1969.

Silicomanganese. Under contract entered into on June 28, 1968, for the conversion of Government-furnished manganese ore to 45,500 short tons of silicomanganese, deliveries through June 30, 1969, totaled 3,365 short tons. The processing of manganese ore to silicomanganese is continuing under the contract with final deliveries to be made by June 15, 1970.



Apollo 11 third stage (S-IVB) is being raised for mating to the second stage

DISPOSAL PROGRAM ACTIVITY

Disposal sales during the January-June period showed a significant increase over those in the previous six months. Totalling \$149.6 million compared with \$102.4 million in the previous period, the increases came principally from larger sales of stockpile aluminum and tungsten. Complete disposition was made of excess antimony, castor oil, and sisal. Rubber sales were terminated due to an increase in the stockpile objective for rubber. Of a total of 54 materials authorized and available for sale from Government inventories, 41 materials contributed to the total sales.

SALES COMMITMENTS

As indicated above, sales of strategic materials amounted to \$149.6 million in the January-June period—an increase over the \$102.4 million realized in July-December 1968. The total for fiscal year 1969 was \$252.0 million.

This fiscal year total, although small compared with fiscal years 1965, 1966 and 1967, was \$44.6 million greater than the fiscal year 1968 figure of \$207.4 million. Since the inception of the disposal program of 1958, sales commitments have amounted to \$3.1 billion. (Figures 1 and 2, p. 15.)

Of the total \$149.6 million sales during the report period, \$80.9 million were from the National and Supplemental Stockpiles, \$45.8 million from the Defense Production Act inventory, and \$22.9 million from other sales, primarily silver. The \$22.9 million included \$21.2 million in silver sales made on behalf of the U.S. Treasury Department, pursuant to Public Law 90-29. The \$21.2 million were the amount realized in excess of the monetary value of \$1.2929 per ounce.

The following table shows the commodities and quantities of each material making up the total sales for January-June.

DISPOSALS OF STRATEGIC AND CRITICAL MATERIALS

January—June 1969

Material	Unit	Sales Commitments			
		Quantity	Government Use	Industrial Use	Total Sales Value
NATIONAL AND SUPPLEMENTAL STOCKPILE INVENTORIES:					
Aluminum.....	ST	73,823	\$	\$39,574,055	\$39,574,055
Aluminum oxide.....	ST	400		43,400	43,400
Antimony.....	ST	2,395		2,013,791	2,013,791
Asbestos, amosite.....	ST	900		158,180	158,180
Asbestos, crocidolite.....	ST	333		63,962	63,962
Beryl ore.....	ST	1,946		1,139,805	1,139,805
Bismuth.....	LB	184,200		736,910	736,910
Cadmium.....	LB	1,799,713		5,063,956	5,063,956
Castor oil.....	LB	8,328,550		1,126,177	1,126,177
Celestite.....	ST	12,199		226,919	226,919
Chromite, metallurgical.....	SDT	20,746		578,613	578,613
Cordage fiber, abaca.....	LB	6,570,825	255,692	696,439	952,131
Cordage fiber, sisal.....	LB	7,196,599		518,483	518,483
Fluorspar, acid grade.....	SDT			(2,022)	(2,022)
Graphite.....	ST	1,893		248,705	248,705
Lead.....	ST	2,891	756,042		756,042
Magnesium.....	ST	18,514		11,927,813	11,927,813

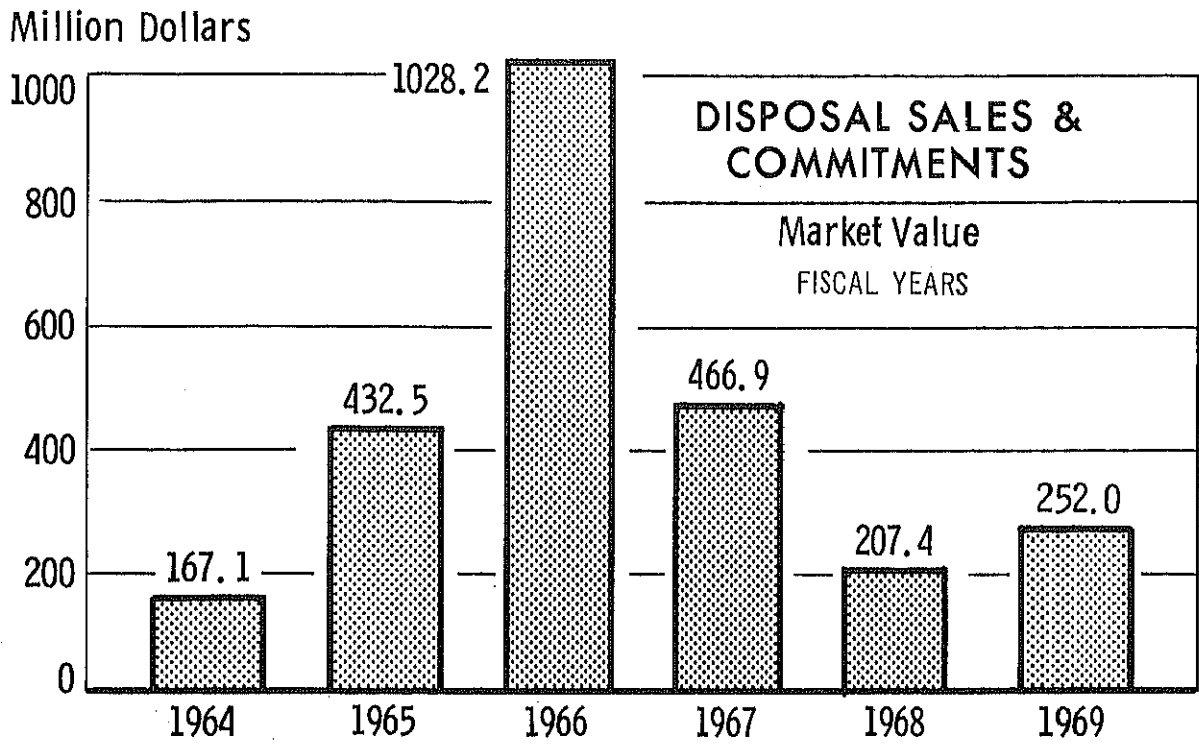
DISPOSALS OF STRATEGIC AND CRITICAL MATERIALS

January—June 1969 (Continued)

Material	Unit	Sales Commitments			
		Quantity	Government Use	Industrial Use	Total Sales Value
Manganese, metallurgical.....	SDT	7,840	\$	\$ 131,249	\$ 131,249
Mica.....	LB	572,964		406,081	406,081
Quartz crystals.....	LB	76,185		227,700	227,700
Rubber.....	LT	20,327	9,617,938		9,617,938
Shellac.....	LB	173,171		22,786	22,786
Tin.....	LT	459	1,593,102		1,593,102
Vegetable Tannins:					
Chestnut.....	LT	4,758		468,695	468,695
Quebracho.....	LT	321	50,450	21,845	72,295
Wattle.....	LT	122		24,509	24,509
Zinc.....	ST	11,188	1,558,976	1,629,826	3,188,802
Total National and Supplemental Stockpiles.....			\$13,832,200	\$67,047,877	\$80,880,077
DEFENSE PRODUCTION ACT INVENTORY:					
Aluminum.....	ST	18,822	\$	\$10,237,765	\$10,237,765
Asbestos, chrysotile.....	ST	336		62,401	62,401
Cobalt.....	LB	1,989,731	136,829	3,352,596	3,489,425
Columbium.....	LB	837,013		1,155,127	1,155,127
Fluorspar, acid grade.....	SDT	9,131	64,300	335,186	399,486
Manganese, metallurgical.....	SDT	6,149		62,700	62,700
Mica, muscovite block.....	LB	15,068		37,007	37,007
Titanium sponge.....	ST	6		11,775	11,775
Tungsten.....	LB	11,591,074	138,393	30,206,306	30,344,699
Total DPA.....			\$ 339,522	\$45,460,863	\$45,800,385
OTHER					
Asbestos, crocidolite.....	ST	1		25	25
Bauxite.....	LDT	110,000		500,000	500,000
Lithium.....	LB	1,760		340	340
Mercury.....	FL	2,271		1,198,508	1,198,508
Silver.....(fine)	TrOz			21,250,011	21,250,011
Total Other.....				\$22,948,884	\$22,948,884
GRAND TOTAL.....			\$14,171,722	\$135,457,624	\$149,629,346

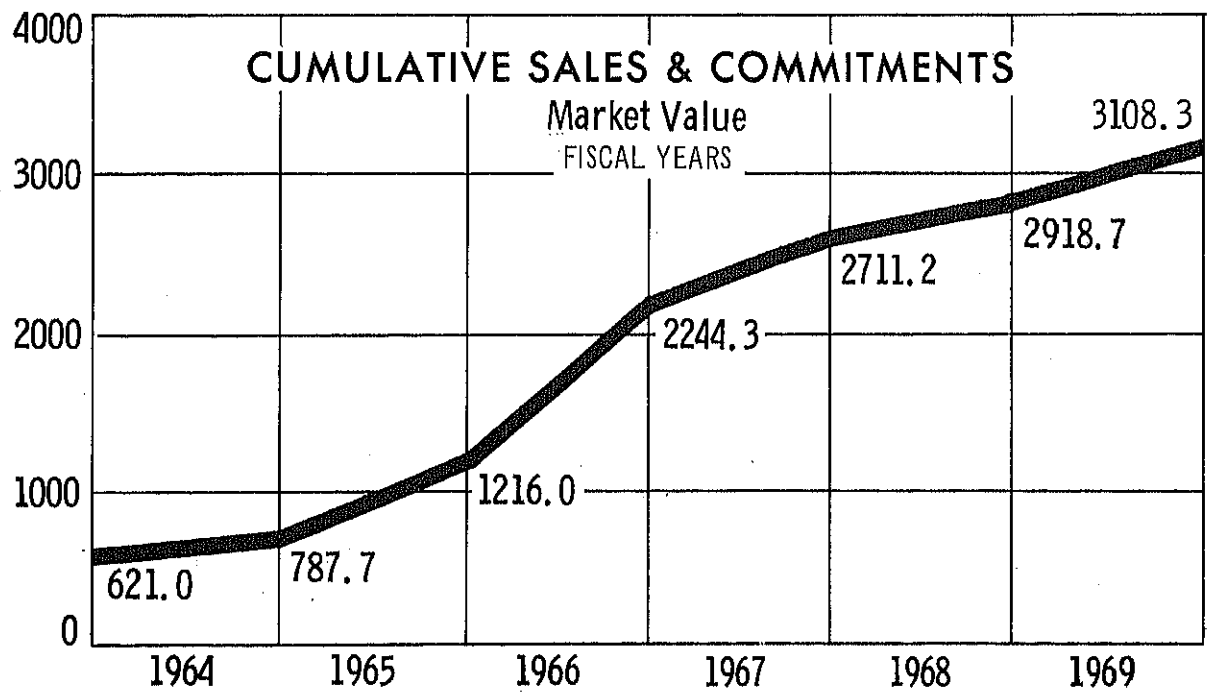
* Represents that portion of the total proceeds in excess of the U.S. monetary value based on \$1.2929. 48,468,570 ounces of silver were sold at an average price of \$1.896.

Figure 1



Million Dollars

Figure 2



LEGISLATION RELATIVE TO STOCKPILE DISPOSAL

No legislation authorizing disposals from the National and/or Supplemental Stockpiles was enacted by the Congress during the January-June period. Several privately sponsored bills for the disposal of lead were introduced early in the session. One of these privately sponsored bills—S.1647, authorizing the release of 100,000 short tons of excess lead

—was enacted July 19, 1969 (Public Law 91-46).

In January, the OEP approved, and GSA submitted to the first session of the 91st Congress, proposed disposal legislation which would authorize the disposal of seven commodities from the National and/or Supplemental Stockpiles, with an estimated market value of \$331.6 million. The following summary indicates the legislative items submitted to the Congress by GSA.

Legislation Submitted by GSA But Not Yet Introduced

Material	Unit	Quantity	Market Value (\$ Millions)	Date of Submission
Asbestos, chrysotile.....	ST	2,844	\$ 0.5	1-15-69
Castor Oil.....	LB	46,000,000	7.4	1-15-69
Corundum.....	ST	1,952	0.2	1-15-69
Diamond, industrial bort.....	KT	17,900,000	42.6	1-15-69
Manganese, chemical, type A.....	SDT	78,400	6.9	1-15-69
Manganese, chemical, type B.....	SDT	36,850	1.8	1-15-69
Tungsten.....	LB	100,000,000	272.2	1-15-69
Total Market Value.....			\$331.6	

NOTES ON STRATEGIC AND CRITICAL MATERIALS DISPOSAL ACTIVITIES JANUARY-JUNE 1969

Aluminum

Aluminum markets increased early in the year and continued strong through June. Excess aluminum sales under the November 23, 1965 long-term agreement picked up correspondingly in the January-June period, totaling 92,645 short tons, valued at \$49.8 million. This was a marked increase over the sales of 26,701 short tons, valued at \$14.0 million, in the July-December 1968 period. As of the end of the report period, cumulative sales since the inception of the sales program amount to 553,604 short tons, valued at \$277.8 million. Approximately 894,884 short tons remain to be taken pursuant to the contracts with major producers.

Antimony

Disposal of antimony gained strength in the report period amounting to 2,395 short tons, valued at \$2.0 million, compared with disposals of 210 short tons, valued at \$0.2 million, during July-December 1968. These sales exhausted the authority to dispose of antimony conferred by Public Law 88-615. A review of the antimony objective was under way at the end of the report period. No action on disposal planning will be taken until after the review is completed.

Cadmium

Sales of cadmium in the January-June period were the highest since the beginning of the current disposal program, totaling approximately 1.8 million pounds, valued at \$5.1 million. In both January and April, the regular quarterly offering of 600,000 pounds was sold almost immediately after the opening of the quarter. In response to the large demand for cadmium, and with the concurrence of the cadmium producing and consuming industry, GSA offered a second 600,000 pounds in the April-June quarter, which were also sold quickly. This supplementary offering was the first in the five year history of the cadmium disposal program. Disposal planning to make the remaining 4.1 million pounds of excess cadmium available was under way at the end of the report period.

Castor Oil

Disposal of excess castor oil previously authorized for sale by the Congress was completed during the report period, returning \$1.1 million for 8,328,550 pounds of oil. Sales of castor oil throughout the fiscal year were strong, totaling 21.9 million pounds, valued at \$3.3 million. Should the proposed legislation for the release of approximately 46.0 million pounds of castor oil be enacted, offerings would resume at the annual rate of 30 million pounds.

Cobalt

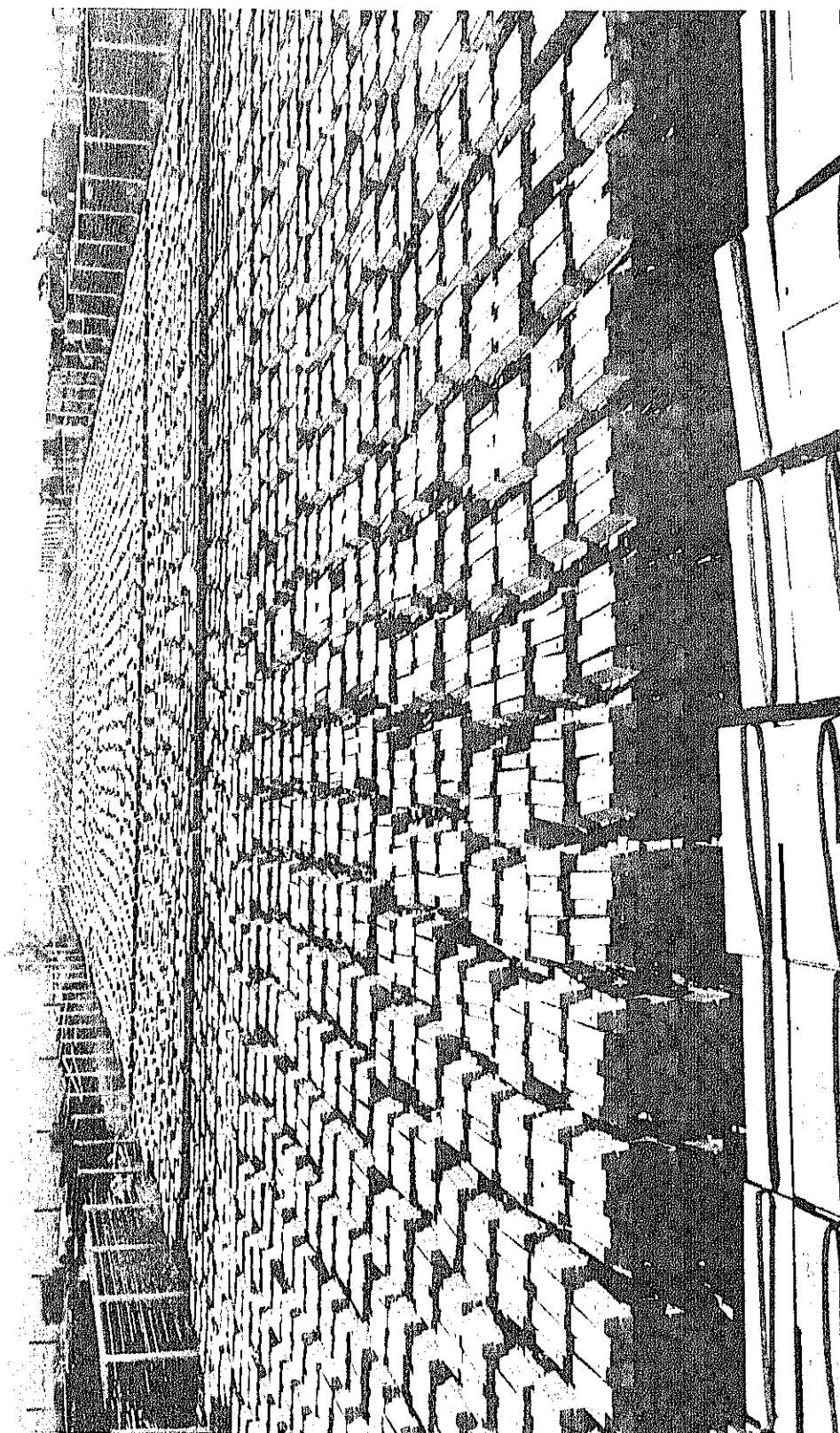
The cobalt disposal program continued at a strong pace. The two million pounds offered were sold at a value of \$3.5 million. In the prior six months, 1.9 million pounds of cobalt were sold for \$3.3 million. Cumulative sales since this program began amount to 14.5 million pounds, valued at \$24.3 million. Of the 25.0 million pounds excess in the DPA inventory released in August 1966, approximately 9.4 million pounds remain for sale.

Cordage Fibers, Sisal

The cordage fibers sisal program, approved by Congress under Public Law 89-462, which authorized disposal of 100.0 million pounds of sisal, was completed during the report period. Sales for the fiscal year totaled 14.2 million pounds, valued at approximately \$1.1 million.

Magnesium

Domestic demand for excess stockpile magnesium was strong, with over 84 percent of the fiscal year disposals made in the January-June period. Sealed-bid sales of magnesium in the latter half of the year amounted to 18,514 short tons, with a value of \$11.9 million. This brought the total sales for the fiscal year to 22,016 tons (\$14.1 million). The magnesium disposal program originally provided for maximum sales of 15,000 tons in fiscal year 1969. The program was reviewed when it became apparent that demand for magnesium was rising faster than production capacity and that it would take at least another year for



Stacked lead on prepared storage surface.

domestic production to balance consumption. At the end of the report period, 33,350 tons remained available for disposal under Public Law 90-604, enacted October 18, 1968.

Mercury

In February 1969, GSA sold the remainder of the nearly 75,000 flasks of mercury declared excess to requirements in 1964. During the report period, these sales under the authority of the Federal Property and Administrative Services Act totaled 2,271 flasks, valued at \$1.2 million. Sales for the fiscal year came to 11,814 flasks, valued at \$6.2 million.

An OEP review of the stockpile objective for mercury, in May 1969, left an excess of approximately 73,600 flasks in the National and Supplemental Stockpiles. GSA has begun coordinating plans for the eventual submission of a legislative proposal to the Congress for the release of this excess. Prior to the end of the report period, an additional 15,000 flasks of mercury was declared excess to agency needs under the Federal Property Act. Preparations were being made for the transfer of this excess to GSA for disposal as the report period ended.

Rubber

On February 20, 1969, the GSA announced that sales of excess stockpile rubber were being terminated. This action was taken to avoid depletion of the rubber inventory prior to announcement of a new stockpile objective for rubber. On March 27, 1969, OEP announced that the rubber objective had been increased from 130,000 long tons to 385,000 tons. This cancelled the excess and all further sales. During the report period, while the sales program was still in effect, 20,327 long tons of rubber were sold at a value of \$9.6 million. All of these sales were generated by Government-use programs including DoD trucks and aircraft tires, retreading, and AID programs. This brought the total rubber sales under the program begun in 1960 to 840,259 long tons, valued at \$456.9 million.

Silver

Acting on behalf of the Treasury Department, GSA sold 48,468,570 fine troy ounces of

silver, realizing a gross of \$83.9 million. Of this amount, \$21.2 million represent the value received for the silver over the monetary value of \$1.2929 per troy ounce. Since the inception of sealed-bid sales on August 4, 1967, a total of 197.0 million fine troy ounces has been sold for \$373.5 million.

In May 1969, GSA announced some changes in the disposal program for silver. The scheduled weekly minimum offerings were reduced from two million troy ounces to 1.5 million troy ounces and the domestic consumption requirement was eliminated. In addition, purchasers under the set-aside for small business are now required to bid on items, where they formerly purchased at the level of the lowest bid accepted under the non-set-aside portion.

Tungsten

Tungsten reversed the trend of July-December 1968 as sales reached 11.6 million pounds, valued at \$30.3 million, in the January-June period. This strong demand brought total tungsten disposals under the Defense Production Act program, approved in 1965, to 30.4 million pounds, valued at \$77.4 million. Disposal authority for approximately 100.0 million pounds (valued at \$272.2 million) of excess tungsten in the National and Supplemental Stockpiles was requested from the Congress in early January. No action had been taken on this request as of June 30.

Zinc

Domestic shortage conditions for zinc increased during the report period. Industries' reserve stocks were seriously depleted by firm market demand. Stockpile sales of zinc in January-June totaled 11,188 short tons, valued at \$3.2 million. This compared with sales of 6,682 short tons, valued at \$1.8 million, in the previous six months.

Should demand continue through fiscal year 1970 at the rate experienced for January-June, all excess stockpile zinc currently authorized for disposal would be sold. A stockpile objective review for zinc was under way at the end of the report period. When this review is completed, disposal planning on the total excess remaining will be considered.



Treasury silver arrives in stockpile.

ACTIVITIES OF THE GENERAL SERVICES ADMINISTRATION RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The General Services Administration is charged with the general operating responsibility, under policies set forth by the Office of Emergency Preparedness, for stockpile management, including (1) purchasing and making commitments to purchase, transferring, rotating, upgrading, and processing of metals, minerals, and other materials; (2) expansion of productive capacity through the installation of additional equipment in Government-owned plants and the installation of Government-owned equipment in privately-owned facilities; (3) storage and maintenance of all strategic materials held in Government inven-

tories; and (4) disposal of excess stockpile materials, including the development of disposal plans, selling the materials and providing for Government-use of such materials.

The activities of the General Services Administration, particularly in connection with procurement, upgrading, and disposals, have been summarized in the earlier sections of this report.

STORAGE AND MAINTENANCE

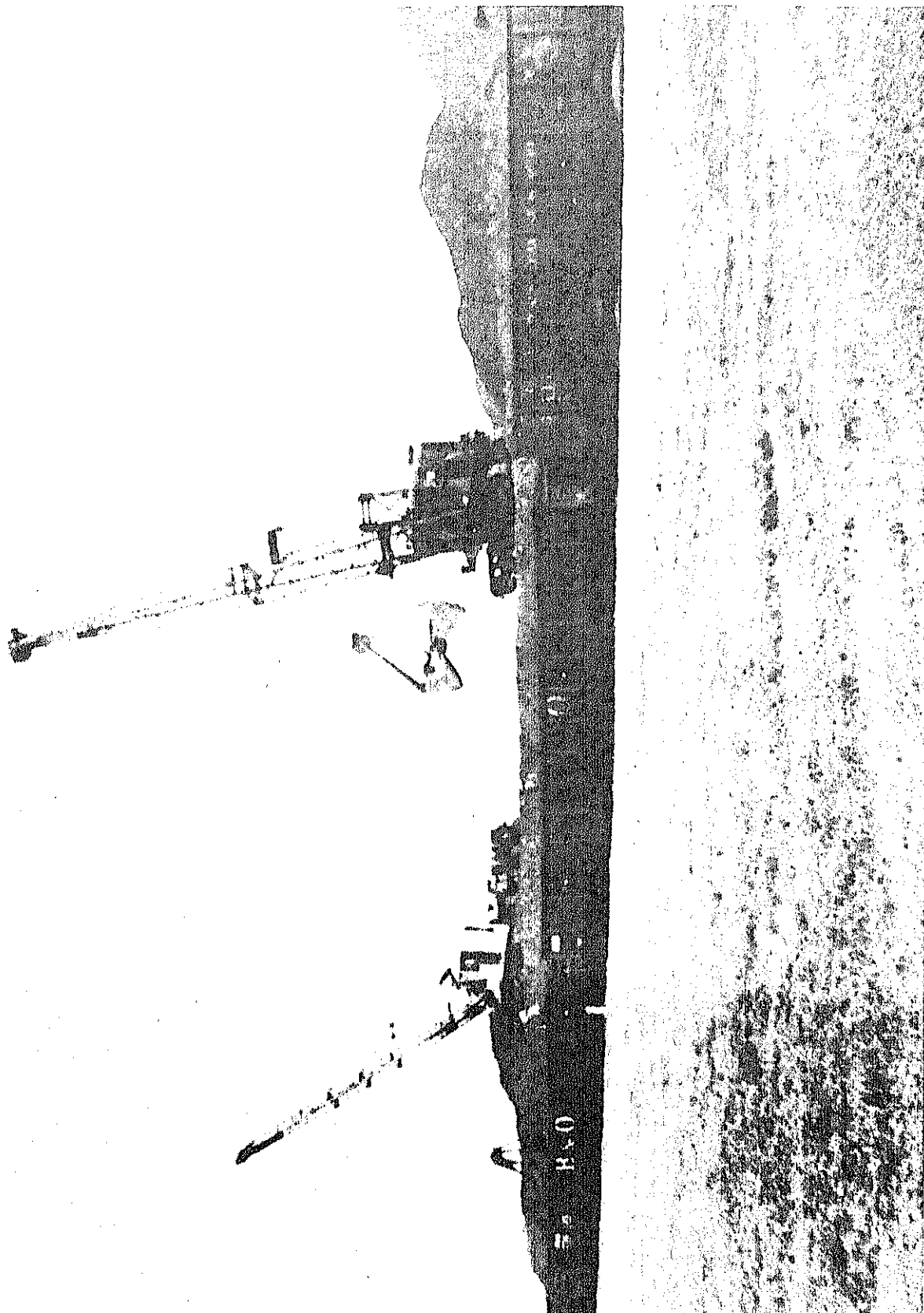
On June 30, 1969, there were 46.5 million tons of strategic materials stored at 140 locations as follows:

	As of June 30, 1969	Change in last 6 months
Military depots.....	36	
GSA depots.....	30	
Other Government-owned sites.....	18	
Leased commercial sites..	13	-1
Industrial plantsites.....	39	
Commercial warehouses...	4	-3
TOTAL.....	140	-4

Three commercial warehouses in Massachusetts and one leased site in Oregon were evacuated during the period.

A total of 456,000 tons of stockpile materials

was shipped from depots during the report period due to disposal programs, making a total of 681,00 tons during fiscal year 1969, as compared with 684,000 tons shipped during fiscal year 1968.



Loading bulk ore at GSA storage location.

ACTIVITIES OF THE DEPARTMENT OF COMMERCE RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

RESPONSIBILITIES

The Department of Commerce has been delegated a number of responsibilities with regard to the National Stockpile and these in turn have been assigned to the Business and Defense Services Administration within the Department. BDSA prepares for the Office of Emergency Preparedness estimates of essential civilian and war-supporting requirements for strategic materials in a mobilization period, a basic element in determining stockpile objectives. In certain limited cases, it also prepares estimates of the mobilization supply of such materials. It reviews plans for disposal of surplus stockpile materials and it provides OEP or GSA with its evaluation of the market impact of proposed schedules of sales. In addition, it develops recommendations in the matter of purchase specifications and storage procedures. It also prepares special studies for OEP regarding strategic material problems and, in general, submits to OEP on behalf of the Department recommendations or advice on stockpile policies and programs.

ESSENTIAL CIVILIAN AND WAR-SUPPORTING REQUIREMENTS

During the first six months of 1969, BDSA completed 30 mobilization requirement studies of strategic and critical materials and participated with OEP in the preparation of studies on aluminum and metallurgical bauxite. This brought the program for requirement studies to within one-third of completion, as 50 of the 76 stockpile items have been reviewed under the new guidelines established in November 1968. Those reviewed included the following:

- Antimony
- Bauxite, refractory grade
- Bismuth
- Celestite
- Chromite, chemical grade
- Chromite, metallurgical grade
- Chromite, refractory grade
- Cobalt
- Columbium

- Diamond crushing bort (2)
- Iodine
- Lead
- Manganese ore, battery grade
- Manganese ore, chemical type A
- Manganese ore, chemical type B
- Manganese ore, metallurgical grade
- Manganese, synthetic dioxide
- Molybdenum
- Nickel
- Palladium
- Platinum
- Quinidine
- Rubber
- Rutile
- Tin
- Titanium metal sponge
- Tungsten
- Vanadium
- Zinc

DISPOSAL PROGRAM

On the basis of market analyses and consultation with industry, BDSA submitted recommendations to GSA on 22 materials excess to stockpile requirements. These recommendations were submitted in connection with GSA's request for Congressional authorizations for new disposals, or were made on the advisability of continuing or altering existing disposal programs.

Recommendations were submitted on the following:

- Beryl
- Cadmium
- Castor oil
- Columbium ores and concentrates
- Cordage fiber, abaca
- Cordage fiber, sisal
- Corundum
- Diamond crushing bort
- Lithium
- Magnesium (2)
- Manganese ore, chemical type A
- Manganese ore, chemical type B
- Mica
- Shellac (2)
- Rare earths

Talc
 Titanium metal sponge
 Vegetable tannin, chestnut
 Vegetable tannin, quebracho
 Vegetable tannin, wattle

STOCKPILE PURCHASE SPECIFICATIONS AND STOCKPILE INSTRUCTIONS

Progress was made in the program to review all purchase specifications to ensure that stockpile standards are commensurate with current industrial requirements. The complexity of some specifications is such that more than one industry survey and many interagency reviews are necessary before a generally acceptable formula can be devised. During the report period, the following revisions of purchase specifications and special stockpile instructions were issued.

PURCHASE SPECIFICATIONS	SPECIAL INSTRUCTIONS
Ferrotungsten	Ferrotungsten
Palladium	
Sperm oil	

SPECIAL STOCKPILE STUDIES AND RELATED ACTIVITIES

Additional projects were carried out as follows:

Ferroalloys. BDSA submitted an extensive study to OEP concerning the effect of imports of ferroalloys on national security. The study was made at the request of OEP in response to a petition from the Committee of Producers of Ferroalloys and Related Products for relief under Section 232 of the Trade Expansion Act of 1962. Under the Act, the President may adjust imports of those commodities which threaten the Nation's security. Before such action is taken, several interested agencies presented evidence to OEP to enable it to make a finding and recommendations to the President. BDSA conducted the investigation on behalf of the Commerce Department because of its role in mobilization activities, domestic business, and foreign trade.

Acid Grade Fluorspar. BDSA worked with the Bureau of Mines to reconcile statistics on the consumption of acid grade fluorspar used in the manufacture of hydrofluoric acid. Concern arose because preliminary consumption statistics were not in accord with known capacities. A plant-by-plant check of the data showed that two producers were not reporting in accordance with the established procedures. As a result of a discussion with the companies concerned, accurate consumption data are now available on this strategic stockpile item and will be used in the forthcoming supply-requirements study.

Tungsten. At the request of OEP, BDSA made a survey of the nine largest producers of certain tungsten products. The survey yielded information on current capacity to produce such products as tungsten metal, tungsten carbide, ammonium paratungstate, and synthetic scheelite. These data are essential to OEP's determination of the tungsten stockpile objective and subobjectives of various upgraded forms of tungsten.

Ball Bearings. Another active project was the investigation into the effect of imports of miniature and instrument precision ball bearings on national security. This study is being carried out for OEP in response to a request from the Anti-Friction Bearing Manufacturers Association for relief under Section 232 of the Trade Expansion Act of 1962. In order to develop firsthand information, representatives of OEP and BDSA visited two ball bearing plants to observe manufacturing operations.

Cadmium. In order to assure that defense-rated orders receive priority in the current cadmium disposal program, BDSA recommended that a set-aside be established exclusively for defense-rated orders on the quarterly 600,000 pounds offerings. Before any awards are made, BDSA verifies each rated order with DOD. The program has been successful in expeditiously channeling cadmium (currently in short supply) directly into defense programs.

ACTIVITIES OF THE DEPARTMENT OF STATE RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The Department of State provides guidance regarding the effects of stockpiling program activities on U.S. foreign relations and deals with problems which may arise out of these activities.

The Department participates with other agencies in the periodic review of the supply and demand situation for each of the stockpiled materials and in the development of related stockpile objectives. It also provides estimates of political and economic reliability of foreign sources of supply in time of national emergency.

In regard to the disposal of surplus materials from the stockpile, the Department shares in the development of disposal plans suited to the particular situation in each material and conducts appropriate consultations with interested foreign governments about each plan. Based on these consultations, an evaluation is made of the political and eco-

nomic effects of disposals on friendly foreign countries and on foreign relations of the United States. As necessary, recommendations are made for the adoption or modification of the proposed disposal plans.

The Department participated in the review of proposals to barter U.S. surplus agricultural products for strategic materials which could be delivered to the stockpile; it advised the Department of Agriculture on foreign policy problems arising from the conduct of such programs.

In the period January-June 1969, the Department conducted numerous consultations with foreign governments concerning new disposal plans and modification of existing programs. In addition, it responded to representations made by foreign governments concerning the effect of disposal programs and revisions of stockpile objectives on their economy and trade.

ACTIVITIES OF THE DEPARTMENT OF AGRICULTURE RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

COTTON TRANSFERRED FROM STOCKPILE FOR DISPOSAL

The cotton stockpile was reduced by sales from 10,623 bales on December 27, 1968, to 5,048 bales on June 27, 1969. This is a reduction of 5,575 bales during this report period.

BARTER ACTIVITIES

No barter contracts for strategic materials for subsequent transfer to the Supplemental

Stockpile were signed during January-June 1969. During this period, strategic materials valued at \$0.1 million were delivered to Commodity Credit Corporation under contracts signed prior to January 1969, bringing the cumulative total of strategic materials delivered to CCC since 1950 to approximately \$1.6 billion. Of this total, \$223.3 million in strategic materials have been transferred to the National Stockpile and about \$1.4 billion to the Supplemental Stockpile through June 30, 1969.

EXPANSION OF DOMESTIC SOURCES OF SUPPLY

The drug plant seeds listed below continue to be maintained in storage at the National Seed Storage Laboratory, Fort Collins, Colorado:

- 8 lots of *Atropa belladonna*,
- 9 lots of *Digitalis lanata*,
- 2 lots of *Digitalis purpurea*,
- 8 elite lines of *Papaver somniferum*.

The stocks are considered sufficient to meet the minimum national production needs in the event of an emergency. Stocks are rejuvenated periodically whenever they reach a critical stage of low viability.

FOREST PRODUCTS RESEARCH

Forest products research has resulted in improvements in packaging and shipping techniques. Such findings may be applicable to the handling and storing of stockpiled items. For example:

An analysis of weather data and approved packaging procedures makes possible the more accurate selection of type and quantity of vapor barrier materials and preservative methods needed to reduce losses from product deterioration in shipping and storage.

A large portion of the \$150 million the railroads pay annually to satisfy claims for damage incurred in freight shipments is due to inadequate fastening wood blocking and bracing in rail cars. Design criteria, based on resistance of nailed cleats to realistic lateral shock forces, have been developed to aid in proper design and application of blocking and bracing to reduce shipment losses and improve performance and use of low-quality timber in this application.

Inexpensive ammonium polyphosphate liquid fertilizers have now been shown to be effective fire retardants for wood.

ACTIVITIES OF THE DEPARTMENT OF THE INTERIOR RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The Department of the Interior is responsible for the management, conservation, and development of the Nation's natural resources to meet the requirements of national security and an expanding economy. The Department provides advice and assistance to the Office of Emergency Preparedness in formulating and carrying out programs for the stockpiling of strategic and critical materials. The Department of the Interior conducts research in exploration, mining, beneficiation, and metallurgy and compiles information on production and consumption for use in stockpile planning.

The Department is responsible for emergency preparedness planning with respect to strategic metals and minerals and other resources. It conducts supply-requirements studies when market conditions or other circumstances indicate problem areas in which materials are likely to be in short supply and recommends appropriate action to overcome deficiencies. The Department also administers programs to encourage the exploration, development, and mining of minerals and metals for emergency purposes.

RUTILE EXPANSION PROGRAM

Under the Domestic Rutile Expansion Program, established by the Office of Emergency Preparedness, the Geological Survey conducted field studies and continued to study and evaluate samples of ores obtained from domestic deposits.

The Bureau of Mines continued to encourage the commercial production and use of manufactured titanium oxide products as substitutes for natural rutile. Use testing has indicated that manufactured titanium oxide products could be used in place of natural rutile in some applications such as metal production and electrode coatings with moderate cost penalties.

Under contract with the Office of Minerals and Solid Fuels, the Battelle Memorial Institute has produced rutile concentrate from material obtained from a deposit at Magnet Cove, Arkansas, for end-use testing.

STOCKPILE DISPOSALS

The Office of Minerals and Solid Fuels continued to coordinate the work of the Department of the Interior in the formulation of programs authorized by OEP for the disposal of surplus Government inventories of strategic and critical materials. Representatives of industry were consulted in the development of disposal plans.

RESOURCE DEVELOPMENT

In Alaska, an investigation of heavy metal deposits has progressed to the point where an important increase in domestic reserves of mercury can be considered a definite possibility.

A fused-salt electrolysis process for reclaiming scrap solder was developed by the Bureau of Mines at the Reno Metallurgy Research Center. The process not only produces a premium grade of high purity lead-tin solder, but concentrates contaminants, including gold, silver, and other precious metals, in an anode bullion for recovery by conventional methods. Disclosure of the development at the 98th Annual Meeting of the American Institute of Mining, Metallurgical and Petroleum Engineers (AIME) stimulated over 20 companies to seek detailed information on the process.

A method was developed at the Bureau of Mines' Rolla Metallurgy Research Center to completely recover and reuse the cobalt and tungsten carbide content of used carbide tool scrap. The reclamation is achieved by treating the scrap in molten zinc at 800° C. and subsequently distilling the zinc from the mass. All of the zinc is recovered and can be reused to reclaim more scrap. The carbide can then be reused to make new cutting and drilling tools without further treatment. The method is unique in that virtually all components are recovered and recycled.

RESEARCH ACTIVITY

Significant advances towards optimization of hydraulic stope fill for ground support in underground mines have resulted from research. Optimization of this type of ground support should increase recovery of ore from existing mines, such as the lead-zinc-silver mines in the Coeur d'Alene mining district,

and permit the mining of deeper and low-grade ores.

As a stimulus and guide to commercial exploration of domestic resources, the costs of producing molybdenum, nickel, tungsten, and vanadium have been estimated and related to individual deposits in the United States and Puerto Rico.

NEW EXPLORATION TECHNIQUE

Promising results of experiments to collect and measure the mercury content of soil gas or air over concealed ore deposits are reported by the Geological Survey. The possibility that the mercury content in the soil gas or atmosphere is higher over ore deposits than over barren ground was tested in several mining districts where the locations of deposits were known. Anomalous amounts of mercury in the air collected at ground level correlated well with the distribution of gold-bearing rocks that are covered by as much as 100 feet of gravel. The mercury content in the atmosphere collected at an altitude of 200 feet by an aircraft was 20 times background over a mercury deposit, and 10 times background over two porphyry copper deposits. Additional experiments are under way to evaluate this technique further and possibly to develop it into a new method of geochemical exploration for concealed ore deposits.

FIELD STUDIES

Two new mineralized areas thought to be worth further exploration were found near Granite Mountain in the eastern Seward Peninsula, Alaska, during investigations conducted in 1968 as part of the Geological Survey's Heavy Metals Program. Lead, zinc, and silver deposits in one area are scattered over an 18-mile-long zone. Molybdenum, bismuth, and silver associated with previously known occurrences of uranium, copper, lead, and zinc were found in a second area of about two square miles.

Special and technical reports, issued during January-June 1969, having a relationship to strategic and critical materials are as follows:

BUREAU OF MINES

Reports of Investigation

- 7215 Horizontal Zinc Retorts
- 7221 Beneficiation of Titanium Chlorination Residues. Preliminary Study.
- 7226 Beneficiation of Ferrochromium by Molten Salt Electrolysis
- 7227 Improved Eluex Process for Eluting Uranium From Ion Exchange Resins
- 7228 Dispersion-Strengthened Copper. Its Preparation and Properties
- 7229 Effect of Varied Extrusion Temperature on the Properties of a Zinc-Copper-Titanium Alloy
- 7232 Liquidus Temperatures of Titaniferous Slags (in Three Parts). 3. Production of Nominal Slag Compositions
- 7245 Separation of Feldspar, Quartz, and Mica From Granite
- 7247 Preparation of Tungsten Carbide by Electrodeposition
- 7250 Experimental Leaching of Gold From Mine Waste
- 7251 Recovering Gold From a Graphitic Schist From Tallapoosa County, Alabama
- 7254 Recovery of Rhenium From Tungsten-Rhenium Alloy
- 7258 Effect of Microstructure on Superconductivity in the Columbium-Hafnium System
- 7262 Interactions of Titanium and Molybdenum Additions With Interstitial Impurities in Vanadium
- 7263 Flotation of Muscovite From Alabama Graphitic-Mica Schist Ore
- 7264 Extraction of Aluminum and Fluorine From Leached Potlining Residues
- 7265 Preparation of Thorium Metal by Vacuum Distillation of Electro-deposited Thorium-Chromium and Thorium-Manganese Alloys
- 7266 Dispersion-Strengthening in Copper-Alumina and Copper-Yttria Alloys
- 7268 Inductoslag Melting of Titanium

Information Circulars

- 8412 Preparation of Anhydrous Aluminum Chloride

Bulletins

- B 647 Fluorine Micas

Journal Articles

- OP 183-68 An Improved Method for Separating Copper and Steel From Copper-Containing Ferrous Scrap
- OP 5-69 Preparation of Cobalt-Rare-Earth Alloys by Electrolysis
- OP 10-69 Electrowinning of Beryllium

Open-File Reports

- OFR 16-68 Soil Sampling at the Egnaty Creek Mercury Prospect, Kuskokwim River Basin, Alaska
- OFR 6-69 Reconnaissance Sampling of Decomposed Monozite for Gold Near Flat, Alaska
- OFR 10-69 Data on Copper Occurrences Associated With Permian Formations in Texas, Oklahoma, and Kansas

Technical Progress Reports

- TPR 8 Electrolytic Oxidation of Carbonaceous Ores for Improving Gold Recovery
- TPR 9 Gold Recovery From Scrap Electronics Solders by Fused-Salt Electrolysis

U.S. GEOLOGICAL SURVEY

Professional Papers

- 341-I Geology and ore deposits of the Antonio dos Santos, Gongo Soco, and Conceicao do Rio Acima quadrangles, Minas Gerais, Brazil, by S. L. Moore (iron, gold, manganese, dolomite, bauxite).
- 576-A Stratigraphy of Slick Rock district and vicinity, San Miguel and Dolores Counties, Colorado, by D. R. Shawe, G. C. Simmons, and N. L. Archbold (uranium-vanadium).
- 614-A Micromineralogy of galena ores, Burgin mine, East Tintic district, Utah, by A. S. Radtke, C. M. Taylor, and H. T. Morris (lead, silver).
- 650-B Geological Survey Research 1969, Chapter B. Summaries of investigations still in progress including short paper on economic geology.

Bulletins

- 1252-A Geology of part of the Alder Creek mining district, Custer County, Idaho, by W. H. Nelson and C. P. Ross (copper, lead-zinc). Issued in December 1968.
- 1252-E Reconnaissance geology, geophysics, and geochemistry of the southeastern part of the Lewis and Clark Range, Montana, by M. R. Mudge, R. L. Erickson, and Dean Kleinkopf, with spectrographic data by G. C. Curtin and A. P. Marranzino, and a section on Isotopic composition of lead, by R. E. Zartman (lead-zinc).
- 1261-C Mineral resources of the Uncompahgre primitive area, Colorado, by R. P. Fischer and R. G. Luedke, U.S. Geological Survey, and M. J. Sheridan and R. G. Raabe, U. S. Bureau of Mines (gold, silver, copper, lead, zinc).
- 1271-G Reconnaissance geology of the Eagle A-1 and A-2 quadrangles, Alaska, by Helen L. Foster (gold, tungsten).
- 1272-D New talc deposit in St. Lawrence County, New York, by C. E. Brown.
- 1273 Geology and mineral deposits of the San Cristobal district, Villa Martin Province, Potosi, Bolivia, by H. W. Jacobson and Carlos Murillo, Lorgio Ruiz, Oscar Tapia, Hugo Zapata, Hugo Alarcon, Edgar Delgadillo, and Carlos Velasco (silver, lead, zinc).
- 1301 Tin resources of the world, by C. L. Sainsbury.

Circulars

- 604 Distribution of gold, copper, and some other metals in the McCarthy B-4 and B-5 quadrangles, Alaska, by E. M. MacKevett, Jr., and J. G. Smith. Issued in December 1968.
- 607 Platinum and associated elements at the New Rambler mine and vicinity, Albany and Carbon Counties, Wyoming, by P. K. Theobald, Jr., and C. E. Thompson.
- 609 Mercury in soil gas and air—A potential tool in mineral exploration, by J. H. McCarthy, Jr., W. W. Vaughn, R. E. Learned, and J. L. Meuschke.
- 611 Asbestos occurrence in the Eagle C-4 quadrangle, Alaska, by Helen L. Foster.

614	Metalliferous deposits near Granite Mountain, eastern Seward Peninsula, Alaska, by T. P. Miller and R. L. Elliott.
615	Some shorter mineral resource investigations in Alaska (nickel, molybdenum, gold, mercury).
617	Results of geological and geochemical investigations in an area northwest of the Chulitna River, central Alaska Range, by C. C. Hawley, Allen L. Clark, M. A. Herdrick, and Sandra H. B. Clark (copper, gold, silver).
621	U.S. Geological Survey heavy metals program progress report, 1968—Field studies.
622	U.S. Geological Survey heavy metals program progress report, 1968—Topical studies.
624	Platinum, palladium, and rhodium analyses of ultramafic and mafic rocks from the Stillwater Complex, Montana, by Norman J. Page, Leonard B. Riley, and Joseph Haffty.

EXPENDITURES OF STOCKPILE FUNDS, BY TYPE
(for the National Stockpile)

Cumulative and for Second Half Fiscal Year 1969

Type of Expenditure	Cumulative through December 31, 1968	Six Months Ended June 30, 1969	Cumulative through June 30, 1969
Expenditures			
Gross Total	\$6,497,828,863	\$7,504,034	\$6,505,332,897
Less: Receipts from Rotation Sales and Reimbursements	545,236,897	212,946	545,449,843
Net Total	5,952,591,966	7,291,088	5,959,883,054
Materials Acquisition Costs, Total	5,439,116,892	67,259	5,439,184,151
Stockpile Maintenance Costs, Total	435,372,626	5,112,298	440,484,919
Facility Construction	43,772,457	—	43,772,457
Storage and Handling Costs	288,838,765	5,108,054	293,946,819
Net Rotation Costs	102,761,404	4,239	102,765,643
Administrative Costs	65,974,349	1,665,438	67,640,787
Operations, Machine Tool Program	12,128,099	445,098	12,573,197

Cumulative figures are the total of expenditures under PL117, 76th Congress and PL520, 79th Congress. Expenditures under PL 117 totaled \$70,000,000 of which \$55,525,237 was for materials acquisition costs and \$14,374,763 was for other costs. Final expenditures under PL 117 were made in FY 1961.

Source: General Services Administration

TOTAL OBLIGATIONS AND EXPENDITURES OF STOCKPILING FUNDS
Under PL 117 and PL 520 for THE NATIONAL STOCKPILE
CUMULATIVE AND BY FISCAL PERIOD THROUGH JUNE 30, 1969

Fiscal Period	OBLIGATIONS INCURRED ^A		EXPENDITURES ^B	
	Net Change by Fiscal Period	Cumulative As of End of Period	By Fiscal Period	Cumulative As of End of Period
Prior to Fiscal Year 1948	\$ 123,871,685	\$ 123,871,685	\$ 66,330,731	\$ 66,330,731
Fiscal Year 1948	252,901,411	376,773,096	82,907,575	149,238,306
Fiscal Year 1949	459,766,881	836,539,977	304,486,177	453,724,483
Fiscal Year 1950	680,427,821	1,516,967,798	440,834,970	894,559,453
Fiscal Year 1951	2,075,317,099	3,592,284,897	655,537,199	1,550,096,652
Fiscal Year 1952	948,117,547	4,540,402,444	844,683,459	2,394,780,111
Fiscal Year 1953	252,375,163	4,792,777,607	906,158,850	3,300,938,961
Fiscal Year 1954	116,586,681	4,909,364,288	644,760,321	3,945,699,282
Fiscal Year 1955	321,799,838	5,231,164,121	801,310,094	4,747,009,376
Fiscal Year 1956 ^C	251,692,667	5,482,856,788	382,011,786 ^C	5,129,021,162 ^C
Fiscal Year 1957	190,000,109	5,672,856,897	354,576,558	5,483,597,720
Fiscal Year 1958	54,478,250	5,727,335,147	173,758,997	5,657,351,717
Fiscal Year 1959	38,710,879	5,766,041,026	65,260,098	5,722,611,815
Fiscal Year 1960	19,859,290	5,785,900,316	49,227,142	5,771,838,957
Fiscal Year 1961	29,082,919	5,814,983,235	33,325,431	5,805,164,388
Fiscal Year 1962	31,179,407	5,846,162,642	33,695,431	5,838,859,819
Fiscal Year 1963	17,414,900	5,863,577,542	22,104,176	5,860,963,995
Fiscal Year 1964	15,489,597	5,879,067,139	16,091,067	5,877,055,062
Fiscal Year 1965	16,288,732	5,895,355,871	16,561,275	5,893,616,337
Fiscal Year 1966	16,296,070	5,911,651,941	16,468,100	5,910,084,437
Fiscal Year 1967	18,197,410	5,929,849,351	17,931,675	5,928,066,112
Fiscal Year 1968	16,008,237	5,945,857,588	15,902,213	5,943,968,325
Fiscal Year 1969	15,451,611	5,961,309,199	15,914,729	5,959,883,054

^A Figures are the sum of obligations incurred under PL 520, 79th Congress and PL 117, 76th Congress.
Final obligations under PL 117, 76th Congress were incurred in Fiscal Year 1949.

^B Figures are the sum of expenditures under PL 520, 79th Congress and PL 117, 76th Congress.
Final expenditures under PL 117, 76th Congress were made in Fiscal Year 1951.

^C 1956 and subsequent fiscal periods and cumulative expenditures are reported on an accrual basis.

STATUS OF OBLIGATIONAL OPERATIONS Under PL-117 and PL-520

As of June 30, 1969

AUTHORITY	AUTHORIZATIONS FOR			OBLIGATIONAL AUTHORITY (CUMULATIVE) ^a
	APPROPRIATED FUNDS ^a	ADVANCE CONTRACTS ^b	LIQUIDATING ADVANCES ^c	
Under PL-117—76th Congress	\$ 10,000,000	\$	\$	\$ 10,000,000
PL-361—76th Congress, August 9, 1939	12,500,000			22,500,000
PL-442—76th Congress, March 25, 1940	47,500,000			70,000,000 ^e
PL-667—76th Congress, June 26, 1940				
Under PL-520—79th Congress	100,000,000	—	—	100,000,000
PL-663—79th Congress, August 8, 1946	100,000,000	75,000,000	—	275,000,000
PL-271—80th Congress, July 30, 1947	225,000,000	300,000,000	—	800,000,000
PL-785—80th Congress, June 25, 1948	75,000,000	—	75,000,000	800,000,000
PL-785—80th Congress, June 25, 1948	40,000,000	270,000,000	—	1,110,000,000
PL-119—81st Congress, June 23, 1949	275,000,000	250,000,000	—	1,635,000,000
PL-150—81st Congress, June 30, 1949	250,000,000	—	250,000,000	1,635,000,000
PL-150—81st Congress, June 30, 1949	—	—	100,000,000 ^d	1,535,000,000
PL-434—81st Congress, October 29, 1949	365,000,000	—	240,000,000	1,660,000,000
PL-759—81st Congress, September 6, 1950	240,000,000	125,000,000	—	2,025,000,000
PL-759—81st Congress, September 6, 1950	573,232,449 ^e	—	—	2,598,232,449
PL-843—81st Congress, September 27, 1950	1,834,911,000	—	—	4,433,143,449
PL-911—81st Congress, January 6, 1951	590,216,500	—	—	5,023,359,949
PL-253—82nd Congress, November 1, 1951	200,000,000	—	200,000,000	5,023,359,949
PL-253—82nd Congress, November 1, 1951	203,979,000	—	70,000,000	5,157,338,949
PL-455—82nd Congress, July 25, 1952	—	—	30,000,000	5,127,338,949
PL-176—83rd Congress, July 31, 1953	—	—	27,600,000	5,099,738,949
PL-428—83rd Congress, June 24, 1954	379,952,000 ^a	—	—	5,479,690,949
PL-663—83rd Congress, August 26, 1954	321,721,000 ⁱ	—	—	5,801,411,949
PL-112—84th Congress, June 30, 1955	27,400,000	—	27,400,000	5,801,411,949
PL-112—84th Congress, June 30, 1955	3,000,000	—	—	5,804,411,949
PL-844—85th Congress, August 28, 1958	—58,370,923 ^j	—	—	5,746,041,026
PL-255—86th Congress, September 14, 1959	22,237,000 ^k	—	—	5,768,278,026
PL-626—86th Congress, July 12, 1960				

PL-141—87th Congress, August 17, 1961	16,682,510 ¹	—	—	5,784,960,536
PL-741—87th Congress, October 3, 1962	8,729,887 ^m	—	—	5,793,690,423
PL-215—88th Congress, December 19, 1963	23,925,000	—	—	5,817,615,423 ⁿ
PL-507—88th Congress, August 30, 1964	9,319,168 ^o	—	—	5,826,934,591
PL-16—89th Congress, April 30, 1965	118,500	—	—	5,827,053,091
PL-128—89th Congress, August 16, 1965	16,096,284 ^p	—	—	5,843,149,375
PL-555—89th Congress, September 6, 1966	18,493,789 ^q	—	—	5,861,643,164
PL-21—90th Congress, May 29, 1967	244,000	—	—	5,861,887,164
PL-121—90th Congress, November 3, 1967	16,341,212 ^r	—	—	5,878,228,376
PL-550—90th Congress, October, 4, 1968	15,176,387 ^s	—	—	5,893,404,763
T total PL-117 and PL-520	\$5,963,404,763	\$1,020,000,000	\$1,020,000,000	\$5,963,404,763

Source: General Services Administration

^a Congressional appropriations of funds for stockpiling purposes.

^b Congressional appropriations of contracting authority for stockpiling purposes in advance of appropriation of funds.

^c Congressional authorizations to liquidate outstanding obligations incurred under previously granted advance contract authority.

^d Cumulative total of appropriated funds and advance contract authorization, less authorization to liquidate outstanding advance contract.

^e Excludes \$8,845,792 received from sale of stockpile materials for wartime consumption. Receipts were returned to Treasury, February 1948.

^f Cancellation of previously authorized authority to make contracts.

^g Excludes \$25,404,921 transferred to operating expenses for rehabilitation of Government-owned material producing plants.

^h Excludes \$48,000 transferred to Transportation and Public Utilities Service, GSA.

ⁱ Excludes \$430,000 transferred to Transportation and Public Utilities Service, GSA and \$199,349,000 transferred to General Fund Receipts on June 27, 1956—PL-623—84th Congress.

^j As of June 30, 1959, this amount included cash of \$52,350,792 and receivables of \$6,020,131.

^k Excludes \$7,763,000 transferred to other GSA Funds for classified and wage board salary increases during 1961.

^l Appropriation of \$40,000,000 of which \$22,700 transferred to Office of Administrator, GSA and \$23,294,790 transferred to General Fund Receipts.

^m Appropriation of \$18,095,000 less transfers to General Fund Receipts of \$9,365,113.

ⁿ Excludes receipts from rotational sales.

^o Appropriation of \$17,755,000 less returns to Treasury of \$8,435,832.

^p Appropriation of \$17,400,000 less returns to Treasury of \$1,303,716.

^q Appropriation of \$19,847,000 less returns to Treasury of \$1,353,211.

^r Stock Piling portion of OE, PMDS appropriation, \$18,712,000, less returns to Treasury of \$2,370,788.

^s Stock Piling portion of OE, PMDS appropriation, \$16,993,000 less returns to Treasury of \$1,816,613.